

## **Project Operating Plan – Brookhaven National Laboratory Recovery Act Project**

### **Brookhaven National Laboratory Recovery Act Project (RA)**

#### **BACKGROUND**

<b>Recovery Act Project:</b>	Brookhaven National Laboratory Recovery Act Project
<b>TAFS:</b>	89-09/10-0335
<b>Project Identification Code:</b>	2002010
<b>Recovery Act Bill Reference:</b>	PL 111-5, Title IV – Energy and Water Development, Non-Defense Environmental Cleanup (H.R.1-25)
<b>Project Cost:</b>	\$70,810,000
<b>Budget Authority:</b>	05949, FE.01.10.00.0
<b>Program Office:</b>	Environmental Management (EM)
<b>Recovery Program Plan:</b>	EM - Non-Defense
<b>Management Office:</b>	Brookhaven National Laboratory Project Office, Thomas J. Vero, (631) 344-3519

#### **LEADS**

<b>Implementation:</b>	N/A
<b>Breakthrough:</b>	N/A
<b>Laboratory:</b>	N/A

### **I. SUMMARY & OBJECTIVES**

#### **Summary:**

This project will clean-up a variety of radiological contaminated facilities and structures, all a result of non-defense nuclear studies and projects performed at Brookhaven National Laboratory (BNL). More specifically the project will:

- Demolish the High Flux Beam Reactor (HFBR) Building 705 (stack structure; approximately 100 meters in height) to the pedestal. Major activities include; utility isolation and removal, the structure's demolition and the disposal of approximately 1950 yd<sup>3</sup> of resulting LLRW (debris consisting of concrete and steel).
- Demolish the HFBR fan houses (Buildings 704 and 802) including their structures, systems, and components, including foundation walls and contaminated soils beneath the buildings, and isolation of Building 750 (the main reactor building). Elimination of these structures will reduce the EM footprint by 11,146 ft<sup>2</sup>.
- Provide permanent isolation of the HFBR (Building 750) with the removal and disposal of contaminated underground utilities. This will result in the disposal of approximately 410 yd<sup>3</sup> of mixed LLRW, and 80 yd<sup>3</sup> of non-hazardous debris.

## **Project Operating Plan – Brookhaven National Laboratory Recovery Act Project**

- Perform HFBR (Building 750) stabilization and isolation activities in preparation for the facility's Long Term Stewardship and transition to the Office of Science.
- Remove radiologically contaminated soils surrounding the Former Hazardous Waste Management Facility perimeter area.
- Remove the A/B waste lines which include underground 4,200 linear feet (lf) of piping used to transfer radioactive liquid waste from Building 801 to Building 811, the Waste Concentration Facility. Other materials being removed include: a concrete trench and culvert (870 lf), asbestos insulation (700 lf), steel trench channels (170 lf), 10" transite/asbestos (1,800 square feet), and contaminated soil (47 cubic yards).
- Remove and dispose the Brookhaven Graphite Research Reactor's pile consisting of over 60,000 graphite blocks whose average dimensions are 4" x 4" with varying lengths at a total volume of 15,625 cubic feet from the Brookhaven Graphite Research Reactor (BGRR); Building 701.
- Remove and dispose of the reactor's Bioshield consisting of nearly 500 cubic yards of Low Level Radioactive Waste made up of metal, metal plate, concrete and secondary wastes.
- Installation of an engineered cap on grade around the BGRR Building 701 and installation of six monitoring wells.

This work was awarded to Brookhaven Science Associates (BSA), the holder of the current M&O contract with the Office of Science and the contractor currently performing the BGRR decontamination and decommissioning (D&D) work.

### **Buy Back Work Scope:**

Based on the potential availability of funds from unused management reserve and contingency funds and from cost efficiencies in executing the planned projects, the following additional candidate projects have been identified should funding become available.

<b>RA Buy-Back Project</b>	<b>Scope Description</b>
BMRR Stack	Demolish and Dispose Stack
Building 810	Demolish and Dispose Facility (1,100 sq. ft.)
Building 811	Demolish and Dispose Facility (2,000 sq. ft.)
Bldg. 801 D&F waste tank removal	Remove and Dispose Tank

## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

FHWMF perimeter soils remediation	Characterize, remediate 20 acres, and dispose soils
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Potential Candidates are:

- Shovel ready
- On EM's excess facility list
- Can be completed within the allotted time frame
- All can be accomplished within 120 days

This Recovery Act work ties to the following DOE and EM Strategic Goals and Themes:

DOE Strategic Goal 4 – Environmental Responsibility – Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.

DOE Strategic Goal 5 – Management and Excellence – Enabling the Department's mission through sound management and business practices.

EM Goals – To safely disposition, deactivate and decommission thousands of contaminated facilities no longer needed by the Department to carry on its current mission; EM is fulfilling its commitments to reduce overall risk and complete cleanup across all sites for generations to come.

### Public Benefits:

Accelerating the removal and proper disposal reduces risk of releases of this material to the environment. The Brookhaven Recovery Act project will reduce the agency's environmental impact by removing and disposing of over 5,000 yd<sup>3</sup> of Low Level Radioactive Waste debris and perform the remediation of contaminated soils.

As a result of the initiation of the Recovery Act projects at Brookhaven, the public will benefit from the acceleration of the HFBR scope with the reduction of accumulated radioactive and contaminated waste as described above sitting over the area's only aquifer nine years sooner with an estimated savings of approximately \$1.5 million.

The expected Recovery Act funding of approximately \$70.8 million will be added to the current Office of Science's Management and Operations (M&O) contract that DOE has in place with Brookhaven Science Associates (BSA). BSA has been supporting environmental cleanup project for the past 10 years and is currently working on the BGRR and HFBR projects, and will continue to do so. BSA will take advantage of Long Island and United States based subcontractors to perform specialty work that will be definitive upon the initiation of the projects. Subcontract awards

## **Project Operating Plan – Brookhaven National Laboratory Recovery Act Project**

and values of those subcontracts are yet to be determined, but are scheduled in the Recovery Act baseline plans, and are being given high priority for implementation.

In summary; this project offers the following public benefits:

- Reduction of risk to the general public as well as onsite workers to radiological exposure, and the
- Reduction of life cycle costs associated with D&D of the HFBR structures through elimination of nine years of project schedule

### **Recovery Act Project Impacts:**

The intended results of this project can be summarized simply by the following statements:

- Completion of this project supports DOE's major priority of legacy footprint reduction with the removal of radiologically contaminated graphite pile and bioshield from the BGRR, and the demolition of 3 structures supporting the HFBR complex consisting of two fan houses (Buildings 704 and 802), and a stack (Building 705), and place both dormant reactors into a condition for Long Term Stewardship and transition to the Office of Science starting in FY 2012.
- Save approximately \$1.5 million by accelerating the HFBR scope by nine years.

Overall, these results of the Brookhaven Recovery Act Project will most certainly support program office goals by ensuring a safer environment to Long Island's environmentally sensitive area and to human health, and accelerating the footprint reduction of legacy facilities by nine years.

## **II. COST & SCHEDULE**

### **Budget**

#### **Table 1: Budget Implementation Monthly & Yearly Obligations (\$M)**

The Project funding is subject to re-apportionment and will be finalized by 9/30/2010; the Project Operating Plan will then be reissued with an obligations table.

#### **Table 2: Budget Implementation Monthly & Yearly Expenditures (\$M)**

The Project funding is subject to re-apportionment and will be finalized by 9/30/2010; the Project Operating Plan will then be reissued with a costs table.

## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

### Funds Returned and Offsetting Collections

There will not be any returned funds or any offsetting collections received as a result of carrying out the Recovery Act projects at Brookhaven.

**Table 3: Funds Returned and Offsetting Collections (\$M)**

	<b>FY 09</b>	<b>FY 10</b>	<b>FY 11</b>	<b>FY 12</b>	<b>FY 13</b>	<b>FY 14</b>	<b>FY 15</b>
[Provide description and amounts for Funds Returned and Offsetting Collections]	0	0	0	0	0	0	0

### Indirect Costs

The Brookhaven estimated percentage of project costs that will be indirect is 9%. This estimate includes General & Administrative (G&A) expenses over the course of the effort.

### Changes to Baseline Budget

**Table 4: Changes to Baseline Budgets (\$M)**

Not applicable

### Milestones

The RA milestones and performance targets (measures) provided below as well as in Table 6 are based on the recent increase in RA project baselines. Critical Decision 2 (CD-2) level estimates have been developed (using Primavera 6.2) for costs and the associated end-state, interim milestones, and associated performance targets (measures). It is expected that as identified Contractor and DOE risks become realized, there may be a need for some change to these milestones and performance measures.

<b>Weekly/Monthly Milestones*</b>	<b>Plan DATE*</b>	<b>Comments</b>
Initial Funding received	4/6/2009	Complete
Issue Contract Modification and Work Authorization	4/13/2009	Complete
FHWMF Soils Removal Planning Meeting	5/10/2009	Complete
FHWMF Soils Identify Resource Requirements	5/17/2009	Complete
FHWMF Soils Procurement Process Initiated	June-09	Complete
FHWMF Soils Remediation Pre-Start Meeting	July-09	Complete
FHWMF Soils Remediation Start	Aug-09	Complete
BGRR D&D Plan of Action Approved by DOE	Sep-09	Complete
A&B Waste Lines D&D Procurement Process Initiated	Oct-09	Complete
DOE Submit Draft RD/RA Plan to Regulators	Nov-09	Complete
BGRR D&D RA Implementation Plan Finalized	Dec-09	Complete

## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

A&B Waste Lines D&D Start	Jan-10	Complete
DOE Submit Draft Final RD/RA Plan to Regulators	Feb-10	Complete
Authorization to Proceed-BGRR D&D Pile Removal	Mar-10	Complete
FHWMF Soil Remediation Complete	Mar-10	Complete
HFBF Utilities Isolations Start	Apr-10	Complete
HFBF Fan House Removal RD/RA Work Plan Approved	May-10	
HFBF Underground Utilities Removal Start	May-10	
A&B Waste Lines D&D Complete	June-10	
HFBF Fan House D&D Start	July-10	
BGRR D&D Pile Removal Complete	July-10	
BGRR Bioshield Removal Start	Aug-10	
BGRR Cap and Monitoring Wells installation Start	Oct-10	
HFBF Stack D&D Start	Oct-10	
BGRR Bioshield Removal Complete	Nov-10	
BGRR Cap and Monitoring Wells installation Complete	Dec-10	
HFBF Underground Utilities Removal Complete	May-11	
HFBF Stack D&D Complete	Aug-11	
HFBF Utilities Isolations Complete	Aug-11	
HFBF Fan House D&D Complete	Aug-11	

**NEPA Compliance:** A portion of the scope of work is addressed in existing categorical exclusion determinations (10/30/07 and 9/10/99). The remaining scope of work is being undertaken pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act; separate NEPA reviews are not required. The Brookhaven Site Office's NEPA Compliance Officer will monitor implementation and, as necessary, determine whether additional NEPA review is required.

**Table 5: Delivery Schedule for Capital Asset Projects**

<b>Program/OECM Milestone</b>	<b>Delivery (End) Date</b>	<b>Comments</b>
Develop capital asset projects Integrated Project List	June 09	Complete
Develop Parametric Performance Baseline (Individual Projects)	July 09	Complete
If < \$100 M Perform IPR, > \$100 M Perform EIR (Individual Projects)	July 09	Complete
Approve Performance Baseline	Sep 09	Complete
Approve Start of Construction	Sep 09	Complete
Approve Project Completion	Sep 11	On Schedule

### NOTES:

Among the Project risks identified as possibly affecting the critical path, the dominant schedule risks include the completion of the required BGRR Readiness Assessment and the HFBF stack demolition rate uncertainty based on site conditions (weather)

## **Project Operating Plan – Brookhaven National Laboratory Recovery Act Project**

differing significantly than planned. A probabilistic risk assessment at an 80% confidence level was performed by Brookhaven Science Associates (BSA) against all identified schedule and cost risks, and has levied schedule and cost adjustments to those activities for their risk mitigation.

### **III. PERFORMANCE**

#### **Performance Measures**

The period of performance for this Recovery Act work began April 2009 and will progress through September 30, 2011. The project's performance targets and associated interim milestones documented in Table 6 denote planned accomplishments through September 30, 2011.

**Table 6: Project Performance Targets**

Recovery Act Project Identification Code	2002010
Linkage To S-1 Priorities	The Recovery Act funding will enable Brookhaven not only help to stabilize, but reinforce the economic prosperity of Long Island, NY.
Linkage to Current Program Goal (if applicable)	DOE Strategic Goal 4 – Environmental Responsibility – Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.  EM Goals – To safely disposition, deactivate and decommission thousands of contaminated facilities no longer needed by the Department to carry on its current mission; EM is fulfilling its commitments to reduce overall risk and complete cleanup across all sites for generations to come.

## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

	<p>By the end of fiscal year 2011, Brookhaven will have removed the BGRR's pile of over 60,000 blocks of radioactive graphite and the bioshield, installed an engineered cap and monitoring wells around the BGRR building, demolished two HFBR Fan Houses, completed building 750 Isolation activities, and removed the underground A/B Waste Lines which include underground piping used to transfer radioactive liquid waste. Other materials being removed include: a concrete trench and culvert, asbestos insulation, steel trench channels, transite/asbestos, and contaminated soils. In addition, Brookhaven will complete the demolition of the 300 foot brick exhaust stack, removal of underground utilities, and removal of contaminated soils near the Former Hazardous Waste Management Facility (FHWMF) as identified in a approved Action Memoranda.</p>
First Year Performance Target (FY 2009)	<p>During the first year of the Recovery Act Project at Brookhaven it is anticipated that the following events will occur: start removal of the FHWMF Soils, and complete the Graphite Pile Removal Preparation.</p>
Q3 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>• Start mobilization for the removal of the FHWMF soils.</li> <li>• Complete Phase I preparations for the graphite pile removal.</li> </ul>
Q4 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>• Start removal of the FHWMF Soils.</li> <li>• BGRR D&amp;D Plan of Action approved by DOE.</li> </ul>



## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

Second Year Performance Target (FY 2010 accomplishments)	During the second year of the Recovery Act Project at Brookhaven it is anticipated that the following events will occur: complete removal of the A/B Lines, completion of Contractor and DOE BGRR Readiness Assessments, complete the removal of the 60,000 graphite blocks in the Graphite Pile, start the removal of the BGRR bioshield, start Building 750 isolation activities, and start the demolition of the building 704 Fan House.
Q2 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>• A/B Waste Lines D&amp;D start.</li> <li>• Authorization to proceed with Graphite Pile removal.</li> <li>• Complete FHWMF soils remediation.</li> <li>• Start D&amp;D Planning for stack removal.</li> </ul>
Q3 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>• HFBR utilities isolations start.</li> <li>• HFBR Fan House removal RD/RA Work Plan Approved.</li> <li>• HFBR underground utilities removal start.</li> <li>• A/B Waste Lines D&amp;D complete.</li> </ul>
Q4 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>• HFBR Fan House D&amp;D start</li> <li>• BGRR Pile removal complete.</li> <li>• BGRR Bioshield removal start</li> <li>• Complete building 750 isolations.</li> </ul>
Third Year Performance Target (FY 2011 accomplishments)	During the third year of the Recovery Act Project at Brookhaven it is anticipated that the following efforts will occur: complete the demolition of building 802 Fan House, complete the demolition of the stack, underground utilities, complete the BGRR Bioshield removal, complete removal.
Q1 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>• BGRR Cap and monitoring wells install complete.</li> <li>• Start demolition of stack.</li> <li>• Complete shipping bioshield waste.</li> <li>• Install engineered cap and monitoring wells.</li> <li>• BGRR Bioshield removal complete.</li> </ul>

## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

Q3 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>Complete underground utilities removal.</li> </ul>
Q4 - Project-Level Quarterly Performance Milestone(s)	<ul style="list-style-type: none"> <li>HFBR stack removal complete</li> <li>HFBR facility utilities isolation complete.</li> <li>HFBR Fan House D&amp;D complete.</li> </ul>

### National Strategic Benefits

**Table 7: National Strategic Benefits**

1. Carbon Emission Reductions: Estimated 5-year undiscounted CO <sub>2</sub> reduction (in metric tonnes of CO <sub>2</sub> equivalent) are [fill in the blank]
2. Oil Consumption Reductions: Estimated 5-year reduction in undiscounted oil consumption (in barrels of oil equivalent) is [fill in the blank]

### NOTES:

N/A.

## IV. MANAGEMENT

### Secretarial-level Items

#### Intended Results and Linkage to Secretary's Priorities

**Table 8: Secretary's Priorities**

Secretary's Priorities	Project Impacts (Qualitative)	Project Impacts (Quantitative)
Science and Discovery	None	None
Clean, Secure Energy	None	None
Economic Prosperity	Project acceleration savings	As a result of the initiation of the Recovery projects at Brookhaven, the public will benefit from the acceleration of the HFBR out year scope with the reduction of accumulated radioactive and contaminated waste sitting over the area's only aquifer, eight years sooner with an estimated overall baseline savings of approximately \$1.5 million.

## **Project Operating Plan – Brookhaven National Laboratory Recovery Act Project**

National Security and Legacy	Accelerating the removal and proper disposal of hazardous or radiological material reduces risk of releases of this material to the environment and lowers exposure risks to the site workers.	It is estimated that over 5,000 cubic yards of Low Level Radioactive Waste (LLRW) will be removed from Brookhaven.
Climate Change	None	None

### **Collaboration and Coordination**

DOE's work is coordinated across the department, government, and globe. Brookhaven's work within the Recovery Act scope is no different. The plan for the Brookhaven Recovery Act project is that it will be executed by Brookhaven Science Associates (BSA) who is the Management and Operating contractor with the Brookhaven Site Landlord - the Office of Science. BSA was formed as a limited liability company by Battelle and the Research Foundation of State University New York on behalf of Stony Brook University.

There will be waste shipments to the Nevada Test Site, Energy Solutions in Utah, and other commercially-operated waste treatment/ storage/disposal facilities. Coordination with these interfaces already exists; however, it will be enhanced throughout this project.

Brookhaven regulators and the site specific Community Advisory Council support acceleration of this proposed work for decontamination and decommissioning, and soil remediation.

Other organizations Brookhaven normally collaborates with on its cleanup Projects include, but are not limited to: Local, State and Federal public agencies supporting Brookhaven's cleanup projects and supporting Professional Labor Unions.

### **Federal Infrastructure Investments**

There are no infrastructure investment project activities associated with this Recovery Act Project.

### **Line Management**

In support of the Brookhaven Recovery Act project, the project's line management and Federal reporting will

- Fully comply with ANSI/EIA-748-A Standard for Earned Value Management Systems.

## Project Operating Plan – Brookhaven National Laboratory Recovery Act Project

- Weekly and Monthly reviews and reports will be provided by the Site's contractor with quarterly reporting to agency management.
- Contractor and EM Site staff have utilized and will continue to utilize existing Project Management processes and procedures that have sustained numerous Project Reviews from independent and agency auditors.

Brookhaven will implement all Recovery Act transparency and reporting requirements through modifications to the contract that will fund this Recovery Act Project.

### Needs from Staff Offices

The Brookhaven project needs from DOE staff offices would include:

- *Direct point-of-contacts with the EM Budget Office, Project Management, and the Consolidated Business Center.*

### 1) Human Capital

With the increased Recovery Act scope for environmental cleanup, the EM Site Project Office has attained additional support contractor help in the skills listed in Table 9.

**Table 9: Information on Hiring Under the Recovery Act**

# & Type of Positions (Title, Series and Grade)	Location (HQ or Field – w/location)	Federal or Contractor	Timeframe (1-6mos; 6+mos; other; specify date needed if possible)
No Hires			

### 2) Procurement

**Table 10: Procurement Plans**

Activity	Type	New/Exist (N/E)	Changes (E), Needs (N)	Status	Expected Complete	Issues (Y/N)
Contract modification services to support the completion of the Recovery Act scope.	M&O Cost Plus Award Fee	E	Additional contract language specific to Recovery Act has been incorporated.	M&O currently supports EM projects	FY 11	N